Customer No.: 31561
Application No.: 10/604,822
Docket No.: 11259-US-PA

## REMARKS

This is a full and timely response to the outstanding Final Office Action mailed April 21, 2006. Reconsideration and allowance of the application and presently pending claims 1-11 as originally filed are respectfully requested.

**Present Status of the Application**

The Office Action rejected claims 1, 2 and 4 under 35 U.S.C. 103(a) as being unpatentable over Asao et al. (US Patent 6,809,717) in view of Watanabe (JP 11-109317). The Office Action also rejected claim 3 under 35 U.S.C. 103(a) as being unpatentable over Asao et al. (US Patent 6,809,717) and Watanabe (JP 11-109317) as applied to claim 1, and further in view of Kori et al. (Pub. No.: US 2004/0071363). The Office Action further rejected claims 5, 6, and 8-11 under 35 U.S.C. 103(a) as being unpatentable over Asao et al. (US Patent 6,809,717) in view of Watanabe (JP 11-109317) and Lin (US Patent 6,674,914). The Office Action still rejected claim 7 under 35 U.S.C. 103(a) as being unpatentable over Asao et al. (US Patent 6,809,717), Lin and Watanabe as applied to claim 5, and further in view of Kori et al. et al. (Pub. No.: US 2004/0071363).

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**Discussion of Office Action Rejections**

Prior to discussing the Office Action Rejections in details, Applicant would like to mention that the citation of Watanabe as a secondary prior art by the Examiner addressing to all of these 103 rejections is inappropriate.

It is held that "**[C]itation of and reliance upon an abstract without citation of and reliance upon the underlying scientific document is generally inappropriate where both the abstract and the underlying document are prior art**", because "[I]t is not uncommon for a full text document to reveal that the document fully anticipates an invention that the abstract renders obvious at best" and "[T]he converse may also be true, that the full text document will **include teachings away** from the invention that preclude an obviousness rejection under 35 U.S.C. 103, when the abstract alone appears to support the rejection" (emphasis added; MPEP 706.02 II).

It is also held that "[I]n limited circumstances, it may be appropriate for the examiner to make a rejection in a **non-final Office action** based in whole or in part on the abstract only without relying on the full text document" and "[I]n such circumstances, the full text document and a translation (if not in English) may be supplied in the next Office action (emphasis added; MPEP 706.02 II).

Therefore, Applicant submits that only citation of and reliance upon an abstract of Watanabe (JP 11-109317) is inappropriate, especially when used for a Final Office Action. The

Examiner is invited to provide a full text document and a translation thereof in the next Office Action, and the status of Final Office Action is respectfully requested to be withdrawn.

Applicant hereby submits that the abstract of Watanabe (JP 11-109317) contains many grammatical mistakes and ambiguity causing difficulties to understand the subject matter that Watanabe intended to disclose. The remarks made below rely on to the most that Applicant can understand about this abstract.

The Office Action rejected claims 1, 2 and 4 under 35 U.S.C. 103(a) as being unpatentable over Asao et al. (US Patent 6,809,717) in view of Watanabe (JP 11-109317).

In response to the rejection to claim 1 under 35 U.S.C. 103(a) as being unpatentable over Asao et al. (US Patent 6,809,717) in view of Watanabe (JP 11-109317), Applicant hereby traverses the rejection and submits that the present invention as set forth in claim 1 is neither taught, disclosed, nor suggested by Asao et al. (US Patent 6,809,717) and Watanabe (JP 11-109317) or any other cited references, taken alone or in combination.

With respect to claim 1, as originally filed, recites in part:

> A driving method of a Liquid Crystal Display (LCD) ... comprising the steps of:
> detecting the maximum grayscale X of all pixels in the present image;
> adjusting brightness of the back-light module to (X/N)×L, where N is the highest grayscale of the image display system, and L is a corresponding brightness to the grayscale value N of the back-light module; and
> adjusting a grayscale value Xa of each pixel to a mapping grayscale value Xb, and driving each of the pixels with the grayscale value Xb accordingly.

Applicant submits that the Examiner fails to establish a *prima facie* obviousness of the present invention as set forth in claim 1, because neither Asao et al. (US Patent 6,809,717, "Asao", hereinafter) nor Watanabe (JP 11-109317, "Watanabe", hereinafter) teaches or suggests the claim limitation as **"adjusting a grayscale value Xa of each pixel to a mapping grayscale value Xb, and driving each of the pixels with the grayscale value Xb accordingly"** that is required for the present method as set forth in claim 1 (emphasis added). Asao teaches "the color light source 101 is turned on at a first illuminance in a subsequent second sub-field period 2F and at a second illuminance lower than the first illuminance but larger than zero in a third sub-field period 3F, thus attaining a transmitted light quantity Tx in the second sub-field period 2F and a transmitted light quantity Ty in the third sub-field period 3F, respectively" (Column 9, lines 21-28, FIG. 21). Applicant would like to highlight that a specific relative object of Asao is "to provide ... a liquid crystal display apparatus, capable of effecting gradation control with high-speed responsiveness while **ensuring a practical brightness** to improve motion picture image qualities without using a complicated circuit" (Column 3, lines 62-67), and Asao relates to ... "a liquid crystal display apparatus including a liquid crystal device for use in **light-valves** for flat-panel displays ..." (Column 1, lines 7-9; Emphasis added). Therefore, the attained transmitted light quantity Tx in the second sub-field period 2F and transmitted light quantity Ty in the third sub-field period 3F are generally used to control the light source as a light-valve for ensuring a practical brightness. Asao does not teach any about the grayscale value of each pixels and their adjustment. One of ordinary skill in the art would have known that the individual adjustment of grayscales of pixels without an overall tendency would affect the practical brightness little.

Therefore, Applicant submits that the combination of Asao et al. (US Patent 6,809,717) and Watanabe (JP 11-109317) do not render the driving method of a Liquid Crystal Display as set forth in claim 1 obvious, and the present invention as set forth in claim 1 should be allowable.

Furthermore, Asao does not teach that "when the maximum grayscale X of all pixels in the present image is detected, brightness of the back-light module is adjusted to (X/N)×L and a grayscale value Xa of each pixel is adjusted to a mapping grayscale value Xb, accordingly" as claimed in claim 1. Instead, Asao teach that diving a field period into three separate sub-field periods and the color light source 101 is turned on at a first illuminance in a subsequent second sub-field period 2F and at a second illuminance lower than the first illuminance but larger than zero in a third sub-field period 3F, which is different from the invention.

Further, the Examiner contended that "Asao et al. clearly stated that a first transmittance corresponding to the first luminance and second transmittance at most 1/5 of the 'second' (should be 'first' instead) transmittance (See Fig. 14, items Tx, Ty, Col. 7, Lines 46-55 and Col. 26, Lines 33-56)" (Page 8 of the current Office Action) and construed accordingly that there is a mapping relationship between the light quantities Tx, Ty. Applicants respectfully disagree.

To understand what is taught by Asao more thoroughly, the prior art reference must be considered in its entirety, which context includes "**a first optical modulation operation is performed to provide a first transmittance** (passing through the device) corresponding to the first luminance for displaying the first image in a first display (sub-) field period and **a second optical modulation operation is performed to provide a second transmittance** which is **non-zero and at most 1/5 of the first transmittance** in a second display (sub-) field period" (Col. 7

Lines 48-55; Emphasis added). Two conditions must be satisfied for the second transmittance, as set forth in Asao et al., that are, 1. being provided by performing a second optical modulation operation; and 2. being within a semi-open semi-closed interval (at most 1/5 of the first transmittance]. However, according to Asao et al., even when the first transmittance is known, the only thing could be accordingly known is that the second transmittance must be within the foregoing interval while the exact value could be any therebetween. Since that is impossible to obtain an exact value of the second transmittance even when knowing the first transmittance, there is no mapping relationship existed between the light quantities Tx, Ty.

Furthermore, Applicant submits that Watanabe does not teach as alleged the steps of "detecting the maximum grayscale X **of all pixels in the present image**" as set forth in claim 1 (Emphasis added).

Watanabe teaches in the abstract "controlling light quantity in proportion to the maximum luminance level of an input video signal". Applicant submit that such a maximum luminance level of an input video signal, without detailed disclosure to which the assertion relies on, is insufficient to read on the maximum grayscale X **of all pixels in the present image**, as set forth in claim 1.

With respect to claim 2, as originally filed, recites in part:

> ...a mapping correlation between the grayscale value Xa and the grayscale value Xb is linear, and the correlation is performed as $Xb = (Xa / X) \times N$.

In response to the rejection of claim 2 under 35 U.S.C. 103(a) as being unpatentable over Asao et al. (US Patent 6,809,717) in view of Watanabe (JP 11-109317), Applicant hereby traverses the rejection and submits that the present invention as set forth in claim 1 is neither taught, disclosed, nor suggested by Asao et al. (US Patent 6,809,717) and Watanabe (JP 11-109317) or any other cited references, taken alone or in combination.

Asao suggests "in the (liquid crystal) display device, the lower (second) luminance in the second operation may preferably be **at most 1/5 of the higher** (first) luminance in the first operation" (Column 7, lines 43-45; Emphasis added). One of ordinary skill in the art should understand that the suggested "1/5" is for defining a preferred value range of the lower luminance in the second operation rather than a coefficient for mapping not the first luminance to the second one. Referring to FIG. 14 of Asao, during the second sub-field period 2F, there are two inflexion points indicating that Ty is only below a certain value, i.e., 1/5, but not linear. Therefore, claim 2 should not be considered as obvious under the combination of Asao et al. (US Patent 6,809,717) and Watanabe (JP 11-109317), and thus should be allowable.

If independent claim 1 is allowable over the prior art of record, then its dependent claim 4 is allowable as a matter of law, because these dependent claims contain all features of their respective independent claim 1. *In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988).

The Office Action also rejected claim 3 under 35 U.S.C. 103(a) as being unpatentable over Asao et al. (US Patent 6,809,717) and Watanabe (JP 11-109317) as applied to claim 1, and further in view of Kori et al. (Pub. No.: US 2004/0071363).

If independent claim 1 is allowable over the prior art of record, then its dependent claim 3 is allowable as a matter of law, because these dependent claims contain all features of their respective independent claim 1. *In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988).

The Office Action further rejected claims 5, 6, and 8-11 under 35 U.S.C. 103(a) as being unpatentable over Asao et al. (US Patent 6,809,717) in view of Watanabe (JP 11-109317) and Lin (US Patent 6,674,914).

With respect to claim 5, as originally filed, recites in part:

> A driving method ... comprising the steps of:
> ...adjusting a grayscale value Xa of each pixel to a mapping grayscale value Xb, and driving each of the pixels with the grayscale value Xb accordingly.

Applicant submits that such a driving method as set forth in claim 5 is neither taught, disclosed, nor suggested by Asao et al. (US Patent 6,809,717), Watanabe (JP 11-109317), Lin (US Patent 6,674,914) or any of the other cited references, taken alone or in combination.

As discussed above, Asao does not teach any about the grayscale value of each pixels and their adjustment, and Watanabe does not teach as alleged the steps of "detecting the

maximum grayscale X **of all pixels in the present image**" as set forth in claim 1. Therefore, the cited prior art references failed to teach or suggest all the claim limitations. Thus the present invention as set forth in claim 5 should be allowable. MPEP 2143.

If independent claim 5 is allowable over the prior art of record, then its dependent claims 6-11 are allowable as a matter of law, because these dependent claims contain all features of their respective independent claim 1. *In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988).

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## CONCLUSION

For at least the foregoing reasons, it is believed that the pending claims 1-11 are in proper condition for allowance and an action to such effect is earnestly solicited. If the Examiner believes that a telephone conference would expedite the examination of the above-identified patent application, the Examiner is invited to call the undersigned.

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Respectfully submitted,

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